

**IN THE CLAIMS**

This listing of the claims replaces all prior versions of the claims in the application.

1. (currently amended): A composition, comprising a cell encoded with a detectable label, wherein the detectable label comprises a semiconductor nanocrystal that is localized in the cytoplasm, nucleus, or an organelle of the cell.
2. (original): The composition of claim 1, wherein the cell is prokaryotic.
3. (original): The composition of claim 1, wherein the cell is eukaryotic.
4. (original): The composition of claim 3, wherein the cell is selected from the group consisting of a yeast cell, a mammalian cell and a plant cell.
5. (original): The composition of claim 4, wherein the cell is a mammalian cell selected from the group consisting of a human cell, a mouse cell, a rat cell, a bovine cell, and a hamster cell.
6. (currently amended): The composition of claim 1, wherein the detectable label further comprises one or more encoding species is selected from the group consisting of a semiconductor nanocrystal (SCNC), a fluorosphere, a nanobar, a light scattering particle, an organic fluorescent species, and a microsphere comprising an SCNC.
- 7-10. (canceled)
11. (original): The composition of claim 1, wherein the semiconductor nanocrystal comprises a core and a shell.

12. (original): The composition of claim 11, wherein the core is selected from the group consisting of ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgS, MgSe, MgTe, CaS, CaSe, CaTe, SrS, SrSe, SrTe, BaS, BaSe, BaTe, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, AlAs, AlP, AlSb, AlS, Ge, Si, Pb, PbS, PbSe, an alloy thereof, and a mixture thereof.

13. (original): The composition of claim 12, wherein the core is CdSe.

14. (original): The composition of claim 13, wherein the shell is ZnS.

15. (original): The composition of claim 1, wherein the cell further comprises an organic fluorophore.

16. (withdrawn): A method of distinguishably identifying a cell, comprising: providing a cell; and contacting the cell with the semiconductor nanocrystal under conditions in which the semiconductor nanocrystal is associated with the cell to provide a labeled cell thereby identifying the cell.

17. (withdrawn): The method of claim 16, wherein the semiconductor nanocrystal comprises a core and a shell.

18. (withdrawn): The method of claim 17, wherein the core is selected from the group consisting of ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgS, MgSe, MgTe, CaS, CaSe, CaTe, SrS, SrSe, SrTe, BaS, BaSe, BaTe, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, AlAs, AlP, AlSb, AlS, Ge, Si, Pb, PbS, PbSe, an alloy thereof, and a mixture thereof.

19. (withdrawn): The method of claim 18, wherein the core is CdSe.

20. (withdrawn): The method of claim 19, wherein the shell is ZnS.

21-24. (canceled)

25. (withdrawn): The method of claim 16, wherein the conditions comprise forming pores in the cell.

26. (withdrawn): The method of claim 25, wherein the pores are formed by contacting the cell with a porogen.

27. (withdrawn): The method of claim 26, wherein the porogen is digitonin.

28. (withdrawn): The method of claim 26, wherein the porogen is a member of the complement cascade.

29. (withdrawn): The method of claim 25, wherein the pores are formed in the cell by electroporation.

30. (withdrawn): The method of claim 25, wherein the pores are formed by osmotic shock.

31. (withdrawn): The method of claim 16, wherein the conditions comprise contacting the cell with an SCNC-containing micelle.

32. (withdrawn): The method of claim 31, wherein the micelle is formed by an agent selected from the group consisting of cholic acid, glycocholic acid, and taurocholic acid, and salts thereof.

33. (withdrawn): The method of claim 16, wherein the conditions comprise microinjection.

34. (withdrawn): The method of claim 16, wherein the conditions comprise endocytosis.

35. (withdrawn): The method of claim 17, wherein the semiconductor nanocrystal contains a localization signal for a subcellular component.

36-37. (canceled)

38. (withdrawn): A method of identifying a cell in a mixed population of cells, comprising mixing the composition of claim 1 with a cell distinct therefrom to form a mixed population, culturing the mixed population, applying an excitation source to the mixed population, and detecting the detectable label to identify the encoded cell.

39-73. (canceled)

74. (new): The composition of claim 1, wherein the detectable label comprises a semiconductor nanocrystal conjugated to a translocatable molecule.

75. (new): The composition of claim 74, wherein the translocatable molecule is a ligand for a cellular receptor that enters the cell by endocytosis.

76. (new): The composition of claim 75, wherein the translocatable molecule is a ligand for a G-protein coupled receptor (GPCR).

77. (new): The composition of claim 74, wherein the translocatable molecule is a ligand for a transporter.

78. (new): The composition of claim 74, wherein the translocatable molecule is an HIV-Tat peptide.

79. (new): The composition of claim 1, wherein the composition further comprises a porogen or liposome.

80. (new): A composition comprising a cell encoded with a detectable label comprising a semiconductor nanocrystal, wherein the cell is immobilized on a chip.

81. (new): The composition of claim 80, wherein the detectable label is localized intracellularly.

82. (new): The composition of claim 80, wherein the detectable label is localized extracellularly.

83. (new): The composition of claim 80, wherein the cell comprises a membrane-associated semiconductor nanocrystal.

84. (new): The composition of claim 80, wherein the detectable label comprises a semiconductor nanocrystal conjugated to a molecule that binds to a membrane-associated protein.

85. (new): The composition of claim 84, wherein the detectable label comprises a semiconductor nanocrystal conjugated to a GPCR ligand.

86. (new): The composition of claim 84, wherein the detectable label comprises a semiconductor nanocrystal conjugated to a transporter ligand.

87. (new): The composition of claim 80, wherein the cell is prokaryotic.
88. (new): The composition of claim 80, wherein the cell is eukaryotic.
89. (new): The composition of claim 88, wherein the cell is selected from the group consisting of a yeast cell, a mammalian cell and a plant cell.
90. (new): The composition of claim 89, wherein the cell is a mammalian cell selected from the group consisting of a human cell, a mouse cell, a rat cell, a bovine cell, and a hamster cell.
91. (new): The composition of claim 80, wherein the detectable label further comprises one or more encoding species selected from the group consisting of a semiconductor nanocrystal (SCNC), a fluorosphere, a nanobar, a light scattering particle, an organic fluorescent species, and a microsphere comprising an SCNC.
92. (new): The composition of claim 80, wherein the semiconductor nanocrystal comprises a core and a shell.
93. (new): The composition of claim 92, wherein the core is selected from the group consisting of ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgS, MgSe, MgTe, CaS, CaSe, CaTe, SrS, SrSe, SrTe, BaS, BaSe, BaTe, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, AlAs, AlP, AlSb, AlS, Ge, Si, Pb, PbS, PbSe, an alloy thereof, and a mixture thereof.
94. (new): The composition of claim 93, wherein the core is CdSe.
95. (new): The composition of claim 93, wherein the shell is ZnS.

96. (new): A composition comprising a cell encoded with a detectable label, wherein said cell is transfected with DNA encoding a non-endogenous protein, wherein the detectable label comprises a semiconductor nanocrystal conjugated to a molecule that binds to said non-endogenous protein.

97. (new): The composition of claim 96, wherein the detectable label is localized intracellularly.

98. (new): The composition of claim 96, wherein the detectable label is localized extracellularly.

99. (new): The composition of claim 96, wherein the detectable label comprises a semiconductor nanocrystal conjugated to a molecule that binds to a membrane-associated protein.

100. (new): The composition of claim 96, wherein the cell is prokaryotic.

101. (new): The composition of claim 96, wherein the cell is eukaryotic.

102. (new): The composition of claim 101, wherein the cell is selected from the group consisting of a yeast cell, a mammalian cell and a plant cell.

103. (new): The composition of claim 102, wherein the cell is a mammalian cell selected from the group consisting of a human cell, a mouse cell, a rat cell, a bovine cell, and a hamster cell.

104. (new): The composition of claim 96, wherein the detectable label further comprises one or more encoding species selected from the group consisting of a semiconductor nanocrystal (SCNC), a fluorosphere, a nanobar, a light scattering particle, an organic fluorescent species, and a microsphere comprising an SCNC.

105. (new): The composition of claim 96, wherein the semiconductor nanocrystal comprises a core and a shell.

106. (new): The composition of claim 105, wherein the core is selected from the group consisting of ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe, HgS, HgSe, HgTe, MgS, MgSe, MgTe, CaS, CaSe, CaTe, SrS, SrSe, SrTe, BaS, BaSe, BaTe, GaN, GaP, GaAs, GaSb, InN, InP, InAs, InSb, AlAs, AlP, AlSb, AlS, Ge, Si, Pb, PbS, PbSe, an alloy thereof, and a mixture thereof.

107. (new): The composition of claim 106, wherein the core is CdSe.

108. (new): The composition of claim 106, wherein the shell is ZnS.